Application No. 08/834,503 Filed April 04, 1997

-- This application is a Divisional of U.S. Patent No. 6, 014, 412. This application also claims the benefit of Provisional Application No. 60/016,251, filed April 19, 1996, and Provisional Patent Application No. 60/016,252, filed April 19, 1996, all of which are hereby incorporated by reference. Further, this application is related to U.S. ~~Application~~ Patent No. ~~08/835,073~~ 5,995,567 by Cioffi et al., filed April 4, 1997, entitled "Radio Frequency Noise Canceller", and U.S. ~~Application~~ Patent No. ~~08/834,500~~ 6,035,000 by Bingham et al., filed April 4, 1997, entitled "Mitigating Radio Frequency Interference in Discrete Multicarrier Transmissions Systems", both of which are hereby incorporated by reference.--

IN THE CLAIMS

Please cancel claims ~~46~~ and ~~50~~ without prejudice or disclaimer. Please amend claims 47-49 and 53 as follows:

~~47~~ 9. (Amended) A receiver as recited in claim ~~48~~ 1, wherein said digital RF interference canceller mitigates the effect of RF interference on the digital frequency domain data by estimating a frequency of the RF interference, estimating the RF interference in accordance with the frequency domain model for the RF interference and the estimated frequency of the RF interference, and removing the estimated RF interference from the digital frequency domain data.

~~48~~ 1. (Amended) A receiver for a multicarrier modulation system, comprising:

an analog-to-digital (A/D) converter, said A/D converter receives analog signals that have been transmitted to said receiver over a transmission media and converts the analog signals to digital time domain signals;

a multicarrier demodulator operatively connected to said A/D converter, said multicarrier demodulator receives the digital time domain signals and converts the digital time domain signals into digital frequency domain data;

a digital RF interference canceller operatively coupled to said multicarrier demodulator, said digital RF interference canceller mitigates the effect of RF

interference on the digital frequency domain data by modeling the RF interference in accordance with a frequency domain model; and

the digital frequency domain data is provided on a plurality of frequency tones used by the multicarrier modulation system, and

wherein the frequency domain model is produced in accordance with the following equation:

$$RFI_{n+m} = \left[\sum_{k=1}^{MO+1} \frac{A_k}{(m-\delta)^k} \right]$$

where RFI_{n+m} is the RF interference at a frequency tone n+m due to a radio interferer at frequency (n+δ), δ is an offset amount, MO is a model order for the frequency domain model, and A_k is a complex number.

49. (Amended) A receiver as recited in claim 48, wherein the digital time domain signals include a plurality of multicarrier modulation symbols carrying data, each of the symbols having a cyclic prefix,

wherein said receiver further comprises:

a cyclic prefix removal and windowing processor operatively connected between said A/D converter and said multicarrier demodulator, said processor performs a time domain windowing operation on the symbols, the time domain windowing includes, for each symbol, adding a portion of the cyclic prefix multiplied by a predetermined coefficient to a rear portion of the symbol.

50. Cancelled

53. (Amended) A method for mitigating radio frequency (RF) interference in a multicarrier modulation system, said method comprising the operations of:

(a) receiving analog signals that have been transmitted over a transmission media;

(b) converting the analog signals to digital time domain signals;

(c) converting the digital time domain signals into digital frequency domain data; and

(d) mitigating the effect of RF interference on the digital frequency domain data by modeling the RF interference in accordance with a frequency domain model, and the digital frequency domain data is provided on a plurality of frequency tones used by the multicarrier modulation system, and wherein the frequency domain model is produced in accordance with the following equation:

$$RFI_{n+m} = \left[\sum_{k=1}^{MO+1} \frac{A_k}{(m-\delta)^k} \right]$$

where RFI_{n+m} is the RF interference at a frequency tone n+m due to a radio interferer at frequency (n+δ), δ is an offset amount, MO is a model order for the frequency domain model, and A_k is a complex number.